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Theater Missile Defense Advanced Warfighting Experiment

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The Theater Missile Defense Advanced Warfighting Experiment (TMD AWE), being conducted from July 1994 to October 1995, is a key component of the Joint Venture Campaign Plan for Force XXI and one of TRADOC's pivotal efforts for 1995. Conducted by the Air Defense Artillery School, in partnership with the Depth and Simultaneous Attack Battle Lab, this experiment will help the Army correct long-standing deficiencies in its ability to provide theater missile defense protection to U.S. and allied forces. Thus, it is important to understand the purpose of this AWE, how it is progressing, and what insights we expect to gain from it.

The TMD AWE really consists of two major components. The first is a live exercise conducted as part of EXERCISE ROVING SANDS 95, an integrated air defense exercise sponsored by USACOM and executed by FORSCOM. The second is Joint Project Optic Cobra (JPOC), the CINCENT's joint TMD exercise that is conducted in conjunction with ROVING SANDS. Both exercises were held from 28 April to 8 May 1995 at Fort Bliss and White Sands Missile Range.

The Threat

Since the fall of the Berlin Wall, the world has witnessed a proliferation of weapons of mass destruction along with the technological means of delivering them. Not only do many major regional powers have the capability of producing these weapons and their attendant delivery systems, but many Third World countries are now also rapidly acquiring these weapons because of their attractiveness as instruments of military power, their relative low cost and their widespread availability. The threat posed by the unchecked spread of ballistic, cruise, and air-to-surface theater missiles is readily apparent and may soon place U.S. and allied forces in a position of unacceptable risk. One only needs to look to the Iran-Iraq War, Desert Storm, and the civil war in Yemen to see recent examples of this expanding

threat. Potentially hostile countries such as Iraq and North Korea also serve as constant reminders of the threat posed by theater missiles.

Creation of the TMD AWE

Concerned about this threat and the Army's ability to respond to it, the Chief of Staff of the Army directed TRADOC to experiment with emerging concepts in TMD and to use ROVING SANDS 95 as a vehicle from which to gain insights on how best to correct shortcomings and exploit strengths by capitalizing on emerging information technologies. TRADOC handed that task to the Air Defense Artillery (ADA) School and the Depth and Simultaneous Attack Battle Lab (D&SABL)-- giving them the principal goal of integrating the Army's TMD efforts across the battlefield operating systems (BOS) to develop a cohesive TMD force capable of providing a seamless and synergistic system of protection to U.S. and allied forces. To accomplish this goal, the ADA School and the D&SABL established the following as their specific objectives in this project:

- Develop a holistic operational concept for integrated TMD that supports joint doctrine. This concept will provide the Army's vision for TMD operations in Force XXI.
- Develop a manual of the specific tactics, techniques, and procedures (TTP) to execute Army TMD in the near term. This TMD TTP manual will lead to publication of a new capstone manual, FM 100-12, *Doctrine for Army Theater Missile Defense*.
- Determine the capabilities and shortfalls of Army TMD as they exist today, and as they will continue to exist if the POM 96-01 is executed.
- Identify doctrine, training, leader development, organizational design, materiel, and soldier (DTLOMS) solutions that can significantly improve the Army's TMD capability.
- Provide input for an investment strategy in technology and equipment that provides the greatest payoff in improved TMD.

To accomplish these tasks, a TMD Special Action Team (SAT) was formed at Fort Bliss in July 1994. The SAT consists of approximately 35 full-time members and several subject matter experts who join them as required. Members of the SAT represent nearly all of the TRADOC schools and battle labs as well as 35 other Army and joint agencies involved in TMD.

Methodology

The TMD AWE combines extensive use of combat modeling and simulation with live exercise experimentation. Before designing the models and simulations used in the TMD AWE, the SAT conducted a survey of other AWEs and CINCs' experiments already completed to ensure that any insights gained from those experiments were included in the TMD AWE. The SAT, with assistance from the TRADOC Analysis Center (TRAC), next conducted a detailed analysis of threat and friendly force capabilities. At that point, the SAT began modeling and simulation to gain an assessment of current (1995) and near-term (2001) TMD capabilities. The SAT team also began work on the TMD concept and TMD TTP Manual.

ROVING SANDS and JPOC

One of the most important components of the TMD AWE thus far was the recent live exercise that supported ROVING SANDS and JPOC. A free-play exercise, it consisted of five phases: (1) Early Entry, (2) Defensive Operations, (3) Transition, (4) Decisive Operations, and (5) Recovery. In each of these phases, the exercise designers merged live missile defense forces, constructive simulations, and virtual simulations in a seamless, three-dimensional Synthetic Theater of War (STOW).

During the Early Entry Phase, the Army Theater Missile Defense Element (ATMDE) Force Projection TOC made its operational debut. The objective of this phase was to determine the ATMDE Force Projection Tactical Operations Center's (TOC) ability to provide TMD integration for the Army component commander before the arrival of follow-on forces and their C2 facilities. The Defensive Operations Phase afforded an opportunity to evaluate active and passive defense objectives. During the Transition Phase, all units conducted after action reviews (AARs), and several air defense artillery units conducted live missile firings.

The focus of the Decisive Operations Phase was the integration of the four elements of TMD, with emphasis on attack operations. Finally, the Recovery Phase included an AAR, additional live missile firings, and the redeployment of player units to home station. Throughout the exercise, more than 40 data collectors under control of the Army's Operational Test and Evaluation Command documented and assessed TMD tactics, techniques, and procedures of selected player units. Lessons learned from the earlier modeling and simulations, along with insights gained during the live exercise, are currently being fed into new models and simulations that will examine future (2011) TMD capabilities.

Progress

- The TMD AWE is on a glide path to success. To date, the following significant actions have been completed:
 - A baseline concept that describes current TMD capabilities has been completed.

- The live exercise and initial AARs have been conducted.
- The live exercise in ROVING SANDS 95 successfully merged the three domains of STOW into a seamless training environment.
- Initial insights from the exercise are being collected and analyzed.

The TMD AWE will produce three products to be delivered to the Chief of Staff of the Army in October 1995. These products are a concept for TMD operations in the Force XXI Army, a detailed TMD TTP Manual that will lead to publication of FM 100-12 *Doctrine for Army Theater Missile Defense*, and an integrated TMD assessment that will enable the Army senior leadership to make informed decisions on a recommended investment strategy to improve TMD capability in the POM 98-01.

Expected Insights

From the TMD AWE we also expect to gain the following insights from experimentation with new ideas and equipment. The ATMDE Force Protection TOC should give the Army component commander the ability to integrate all TMD operations within the Army, and ideally will serve as the integrating link between the Army and the TMD elements of the other Services. We anticipate that the Deep Operations Coordination Cell (DOCC) will provide a rapid attack option to Army TMD planners seeking to destroy enemy launchers and theater missile infrastructure. From the various command and control architectures employed during the exercise, we will determine the best method to integrate the elements of TMD.

Thorough analysis of extensive modeling and simulation, lessons learned during the live exercise, and the additional insights gained from experimentation with new equipment and organizations will ensure the success of the TMD AWE. Out of this AWE, we expect to define more clearly TMD warfighting concepts and procedures. These refined concepts and procedures will improve our ability to protect the force in the near term and will give us a clear vision of how to conduct complex TMD operations in the Force XXI Army.